



STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
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 HONOLULU, HAWAII 96809

DIVISIONS:
 AQUACULTURE DEVELOPMENT PROGRAM
 AQUATIC RESOURCES CONSERVATION AND RESOURCES ENFORCEMENT
 CONVEYANCES
 FORESTRY AND WILDLIFE LAND MANAGEMENT
 STATE PARKS
 WATER AND LAND DEVELOPMENT

FILE NO.: HA-7/22/82-1492
 180-Day Exp. Date: 1/20/83

December 17, 1982

Board of Land and Natural Resources
 State of Hawaii
 Honolulu, Hawaii

Gentlemen:

Conservation District Use Application for Construction of the California Institute of Technology 10-Meter Telescope for Millimeter and Submillimeter Astronomy at Mauna Kea, with Right of Entry at Hamakua, Hawaii

APPLICANT: University of Hawaii
 2444 Dole Street, Room 202
 Honolulu, Hawaii 96822

LANDOWNERSHIP: State of Hawaii, General Lease No. S-4191
 to the University of Hawaii

LOCATION: TMK: 4-4-15: 9

AREA OF PARCEL/USE: 13,321.054 acres/8,850 square feet
 on a .75 acre site

SUBZONE: Resource

DESCRIPTION OF AREA:

Access to the summit of Mauna Kea is from Saddle Road, Route 20, which connects Hilo to Mamalahoa Highway, Route 19. From Saddle Road at Puu Huluhulu, a paved road extends approximately six miles to Hale Pohaku. From there, an 8.5 mile unpaved one-lane road extends to the summit. Exhibit A shows the roads within the Science Reserve. Caltech's proposed site is adjacent to an unpaved road.

The applicant indicates there are no officially designated endangered plant species on the summit. Photographs of the proposed site indicate that the area is a likely site for lichens and bryophytes, the principal components of flora at the summit. The project site is not suitable for higher plant life such as ferns or seed bearing plants.

The topography of the site is relatively flat.

No utilities directly serve the site. The generator used for power needs at the summit is approximately 1,300 feet south of Caltech's proposed site. Two 12 KV underground power lines run from the generator to the summit under cover. Power is distributed through underground conduits to the existing telescope facilities.

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be trucked to the summit from Hilo. Each telescope has its own water storage tank. Each of the four large existing telescopes has its own septic tank. Solid waste is carried down to Hale Pohaku by telescope personnel.

CURRENT USE:

The .75 acre site, within the Science Reserve at the foot of Puu Poliahu is empty and undeveloped.

PROPOSED USE:

The applicant, the University of Hawaii, proposes to utilize a .75 acre site for the purpose of constructing a 10-Meter Telescope for Millimeter and Submillimeter Astronomy for the California Institute of Technology.

The proposed telescope will be able to investigate the submillimeter portion of the electromagnetic spectrum. The development of an instrument capable of studying the submillimeter band has opened a whole new field of inquiry for astronomers. The telescope provides a new way to investigate the astronomical environment in regions inaccessible to optical methods.

The University of Hawaii is the holder of a general lease for the area known as the Science Reserve and are the applicants; however, the telescope would be constructed and operated by the California Institute of Technology. If approval is given for the proposed use, the University will enter into an operating agreement and sublease with the California Institute of Technology.

Description of Operations:

Construction: Although the .75 acre site selected for this telescope is essentially level, some grading and excavating will be necessary to prepare the area for construction. A minimal foundation will be required, since the telescope and dome are relatively light (total building and telescope weight will be less than 250 tons).

Approximately 100 cubic yards will have to be excavated for concrete footing, foundations, an 850 gallon septic tank, housing for the 25 KW standby generator and 1,000 gallon fuel tank, and a 1,000 to 1,500 gallon water tank. Most of the excavated material will be used as fill or for balancing the site. Additional excavation will be done for installation of the telephone and power lines. The existing utility trench and 1,300 linear feet of a new trench from the generator to the Caltech site will have to be excavated for telephone and power lines.

One hundred fifty yards of concrete will be used in the construction of the facility. No concrete batch plant will be required. Dry mix concrete will be trucked to the summit in mixing trucks and water will be added at the site. Approximately thirty cubic yards of concrete will be required.

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Construction equipment, vehicles, and materials, a temporary construction field office and an auxiliary generator will be stored on-site during construction and will be removed upon completion of the construction phase. Outdoor sanitary facilities will be used during the construction phase. Power will be provided by the on-site auxiliary generator.

Operations: It is estimated that when the telescope becomes operational an average of five to seven persons will be present on the mountain at one time, operating in two shifts per day at the telescope site. The additional personnel are expected to generate an additional 1,100 to 1,500 gallons per month of liquid sewage, the consumption of 1,500 to 2,000 gallons per month of water for heating, cooling and domestic consumption, and the additional consumption of less than four gallons per hour of diesel fuel by the 850 KW generator.

The Agency Review

On August 4, 1982, the application was sent out for review and comment to the following agencies:

U.S. Fish and Wildlife Service; County of Hawaii, Planning Department, Department of Water Supply, Department of Parks and Recreation, Department of Public Works; State Department of Health, Office of Hawaiian Affairs, Department of Defense, Office of Environmental Quality Control, Environmental Quality Commission; and the following Department of Land and Natural Resources divisions: Aquatic Resources, Forestry and Wildlife, State Parks/Historic Sites, Land Management, Water and Land Development, Conservation and Resources Enforcement, and the Natural Area Reserves System.

Their comments are as follows:

United State Department of the Interior, Fish and Wildlife Service:

The proposed action is not expected to have adverse impact on significant fish and wildlife resources in the area; however, we recommend that additional studies of the geoeolian ecosystems at Mauna Kea be completed, and that appropriate mitigation measures be identified to protect these resources prior to any ground-breaking or construction. (Emphasis added)

County of Hawaii, Planning Department:

We have reviewed both the subject application and its draft Environmental Impact Statement (EIS) dated May 18, 1982. We express no objection to this application; and the draft EIS appears to have adequately addressed the more significant environmental aspects of the proposal, as also referenced in our February 10, 1982 letter which responded to the EIS Preparation Notice.

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County of Hawaii, Department of Public Works:

We have no comments or objections to offer.

County of Hawaii, Department of Parks and Recreation:

This department has no adverse comments to offer.

State of Hawaii, Department of Health:

We do not foresee any major adverse environmental effects arising from this project.

Please be informed that we have no objections to granting the permit.

State of Hawaii, Department of Defense:

We have no comments to offer at this time.

Office of Environmental Quality Control:

We have no objections to this project. The Environmental Impact Statement for this project has met our disclosure criteria. The EIS was accepted on August 26, 1982.

Division of Aquatic Resources:

Our concern for this proposed project is the potential impact of sewage disposal on the waters of Lake Waiau even though the Lake is approximately 4,000 feet from and at an elevation 280 feet below the proposed Caltech telescope site. The subject document, however, addresses this potential problem at great length and we feel assured that Lake Waiau will be safe from sewage contamination. Aside from this we have no further comments to offer.

Division of Forestry and Wildlife:

We are very much concerned over the impact the astronomy development has had on Mauna Kea to date. We strongly recommend that Caltech's EIS and Conservation District Use Application not be accepted and processed individually. Rather, the Department should wait for the University of Hawaii's single EIS and Conservation District Use Application which will include all summit development to the year 2000, including Caltech's proposed facility. Such a collective proposal will provide the Department and the public with an opportunity to review and evaluate the total impact of the development proposed for the next twenty years.

We appreciate the reason for Caltech not wanting to wait. However, to accept their Conservation District Use Application will be setting a precedent for the individual requests. www.carrollcox.com 808-782-6627
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concept. (Emphasis added)

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Division of State Parks/Historic Sites:

Recreation Concerns:

We note that snow play activities will continue as they have in the past (p. 76). No mention has been made of any public information facilities at the observatory although we note Caltech has agreed to assist in funding the visitor information center in Hale Pohaku.

Historic Sites Concerns:

We concur with the subject document's statement that preserving the integrity of Lake Waiiau and protecting the adze quarry are concerns which must be addressed (Draft EIS, 1982:74).

The Mauna Kea Adze Quarry (site #4136) is listed on the National Register of Historic Places. Its proximity to the proposed telescope site may result in indirect impacts to this site. Therefore, we would like to review the archaeological report prior to making any further recommendations.

Division of Land Management:

In general, the Land Management Division has no objections to the subdivision, construction and use of State land at Mauna Kea, Hamakua, Hawaii for astronomy use by the California Institute of Technology as requested by the University of Hawaii.

However, we reserve final approval of such application pending review of the Environmental Impact Statement for the project.

Division of Water and Land Development:

1. Although the summit area has a low rainfall of less than 15 inches and minimal grading and excavation will be done for site preparation, it is suggested that appropriate measures be taken to prevent or minimize erosion and sedimentation during and after construction of the project.
2. The Draft EIS indicates sewage disposal into a septic tank is not expected to impact the hydrology of the area or pollute Lake Waiiau. However, it is suggested that the applicant monitor the septic tank disposal system on a continuing basis to identify and control any adverse environmental impacts if any should occur.

Natural Area Reserves System:

Based on information in the draft EIS for the above project (Caltech 10-Meter Telescope on Mauna Kea Summit), the nearby Mauna Kea Ice Age Natural Area Reserve and its protected resources will not be adversely impacted. Potential short- and long-term effects of air pollutants and ground leaching

on adjacent areas, including Lake Waiau, are addressed and considered to be negligible. We have no objection to the project.

SUMMARY OF PUBLIC HEARING:

The Board of Land and Natural Resources held a public hearing on this matter on September 9, 1982 at 6:30 p.m. at the Waimea State Office Building, Waimea, Hawaii.

Concerns were expressed relating to the following items:

- a. Environmental Impact Statement Approval/Responsibility for action.

The Office of Environmental Quality Control makes a recommendation, based on the environmental quality requirements for information and disclosure, to the Governor regarding the EIS's acceptability. OEQC indicated the document had met their requirements for disclosure and made a recommendation for acceptance on August 19, 1982. This EIS was accepted by the Governor, State of Hawaii, on August 26, 1982.

- b. Responsibility for Monitoring Lake Waiau water quality.

Lake Waiau is approximately 40,000 meters from the project site.

The applicant at the public hearing stated that the United States Geological Survey is presently monitoring the water quality of Lake Waiau; however, Staff has been informed that this is not an on-going activity and presently no one is monitoring the water quality (per telephone conversation with Natural Area Reserves administrator, 10/8/82).

We note that anyone assigned the task would require not only staff but also a laboratory able to provide the required analysis.

The University's consultant has provided additional analysis and maintains that sewage effluent pollution of Lake Waiau is "not possible."

- c. Relationship of the Proposal to the 1977 Mauna Kea Plan.

(Addressed in the analysis section of this submittal)

- d. Choice of Mauna Kea; other sites considered; could the project be undertaken elsewhere?

Mauna Kea satisfies all the essential criteria for the type of facility proposed. A high elevation with dry atmosphere, year-around good weather accessible by road year around, infrastructure for astronomy and technical support, location near the equator permitting a good view of the southern skies and thus the galactic center, the area of star formation (referred to as the "star site"). Based on these criteria, Mauna Kea was determined the best site

Other sites evaluated include the following: White Mountain, California; the Chilean mountain ranges, Viero Tolo, Las Campanas; Mount Lemon and Mount Graham Arizona, several other California mountains, and mountains in the Canary Islands, off the Coast of Africa. A world-wide survey was undertaken in 1972/1973 specifically for this purpose, site evaluation.

e. Nature of Caltech/UH agreements, sub-lease; compensation/benefits.

The University of Hawaii is the holder of a master lease and are the applicants for this Conservation District Use Application. The telescope will be constructed by the California Institute of Technology. UH has a Memorandum of Understanding with the California Institute of Technology requiring the University of Hawaii to assist Caltech in all necessary applications and approvals. Should the University of Hawaii fail to require the necessary permits and approvals within the time specified in the Memorandum, the project, and agreement is terminated.

The applicant indicates that if this Conservation District Use Application is approved, the University and Caltech would enter into operating agreements and a sub-lease.

It is anticipated that Caltech would share the cost of providing infrastructure, and the associated costs of operating on Mauna Kea.

The University will also request compensation. Until now this has usually been provided in the form of free utilization of the facility during a limited time period. Other forms of compensation are being explored, time-plus-facility, or graduate student assistance. The final arrangements have not been worked out, but would essentially serve to support UH-Manoa Astronomy Program.

Presently, the University is permitted 15 percent time usage of the United Kingdom Infrared Telescope.

Economic benefit will consist of the spending of about \$500,000.00 dollars within the State. The University has leased 188 acres of land in Hilo, above the University Hilo campus off Komohana Street for lease support facilities and presently desires to locate Caltech support staff at this site, rather than on Mauna Kea.

f. Visual Pollution resulting from presence of the Caltech Telescope.

Response: The applicant indicated this telescope is situated in a flat area which cannot be seen from Hilo, Waimea, or Kailua-Kona. While the site is not in a gully, it does sit on a plateau at an elevation of 13,336 feet, between Puu Poliahu and Puu Wekui, the summit. To the north it is hidden from the Kamuela area by another 22,600 foot peak. To the south, the site is exposed, as the slope drops down toward Hale Pohaku and the Natural Area Reserve System area. but

due to its placement, it appears it would not be visible from the Saddle Road. The proposed facility could only be seen at a distance, by someone on the summit or upper slopes of Mauna Loa.

g. Monitoring of Air Quality

The applicant indicates this is done by the National Oceanic and Atmospheric Administration (NOAA) on both Mauna Loa and Mauna Kea. NOAA monitors the emissions from diesel generators used for power requirements on Mauna Kea.

h. Radio Frequency Interference

The proposed telescope is a passive telescope; it receives signals. It does not generate signals. Other telescopes now present on Mauna Kea do not experience interferences.

Local island radio operators (HAM operators) have expressed concern. The University has reassured operators that any communication systems now used operate at a frequency different from that used by HAM operators.

ANALYSIS:

Following review and acceptance of the application, for processing, the applicant, by letter dated August 4, 1982, was notified that:

1. The proposed use is a conditional use in the Resource Subzone of the Conservation District according to Title 13, Chapter 2, Administrative Rules, as amended;
2. A public hearing pursuant to Chapter 183-41, Hawaii Revised Statutes, as amended, was required and held;
3. An environmental impact statement in accordance with Section 1:31 of the EIS Regulations will be required for the proposed use and written clearance from the County of Hawaii regarding SMA requirements has been obtained.

The objective of the Resource Subzone is to develop, with proper management, areas to ensure sustained use of the natural resources of those areas.

Section 13-2-21 relating to standards requires all applications be reviewed in such a manner that the objective of the subzone is given primary consideration.

This analysis consists of a review of the input received through 1) a chronology of past events, 2) agency review, the Public Hearing process, and the Environmental Impact Statement and 3) the Land Use Planning perspective.

1. Mauna Kea Chronology

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which had been used by Forestry personnel and road construction workers. Hale Pohaku was placed under the jurisdiction of State Parks division of Department of Land and Natural Resources in 1962, but has never been designated as a State park.

- 1963 Dr. Gerald P. Kuper of University of Arizona and University of Hawaii carries out first observatory site tests with State and Federal support.
- 6/18/68 Board of Land and Natural Resources leases all lands above the 12,000 foot elevation to the University of Hawaii for a period of 65 years. (General Lease No. S-4191. Area is designated "The Mauna Kea Science Reserve". Area is 13,321 acres)
- 7/68 UH/USAF 61 cm (24 inches) Optical telescope becomes operational.
- Fall, 1968 UH/NASA 61 cm (24 inches) Optical telescope becomes operational.
- 1/70 UH/NASA 2.24 cm (88 inches) Optical/Infrared Telescope becomes operational.
- 6/8/73 Board approves CDUA No. HA-4/27/73-442 for construction of underground electric distribution line from 12,950 feet to observatory at summit - a five foot wide easement running over a distance of 5,200 feet. (12.47 kv line)
- 5/10/74 Board approves CDUA HA-1/29/74-528 by Canada-France-Hawaii Telescope Corporation for observatory use. Hawaii Corporation for temporary buildings and utilities for construction workers.
- 5/24/74 Board approves CDUA HA-1/29/74-527 by DLNR - Land Management Division for Canada-France-Hawaii Telescope Corporation for observatory use.
- 6/14/74 Board approves CDUA No. HA-2/28/74-537 by the State of Hawaii, Department of Transportation, Highways Division for Mauna Kea Observatory Access Road.
- 6/13/75 Board approves CDUA No. HA-2/27/75-640 by Downs Laboratory of Physics for temporary portable Infrared Telescope use.
- 8/4/75 Governor accepts EIS for IRTF and UKIRT facilities. (see CDUA HA-653)
- 8/29/75 Board approves CDUA No. HA-3/25/75-653 for construction Infrared Telescope Facility (IRF) and United Kingdom Infrared Telescope (UKIRT) and United Kingdom Infrared Telescope (UKIRT) Access Road.

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- 3/12/76 Board denies CDUA No. HA-1/2/76-746 by Science Research Council for temporary buildings.
- 5/14/76 Board approves CDUA No. HA-3/30/76-781 for construction of temporary living quarters for UKIRT workers at Hale Pohaku.
- 5/14/76 Board approves CDUA No. HA-4/26/79-789 for Temporary Access Use - a Batch Plant for construction of the UKIRT facilities.
- 7/23/76 Board approves CDUA No. HA-5/13/76-804 for
8/26/76- improvements to existing buildings at Hale Pohaku;
amended rennovations - fire detection and alarm systems;
replacement of stairs, walks, railings to mess hall and Dormitory Number Two.
- 5/13/77 Board approves CDUA No. HA-1/6/77-895 for interim mid-level facilities, replacement of buildings.
- 5/27/77 Board issues revocable permit for 4.0 acres at Hale Pohaku, a portion of which is occupied by the existing dormitory/mess hall constructed for UKIRT workers.
- 5/27/77 Revocable Permit No. S-5537 for four acres of Hale Pohaku issued. This permit replaced earlier Revocable Permit No. S-4440 for 12,000 square feet. A larger area - six acres was subdivided under CDUA No. HA-1430 replacing revocable permits.
- 9/9/77 Board approves CDUA No. HA-5/26/77-954 - an after-the-fact CDUA for three (3) telescopes: 88-inch telescope, 24-inch Air Force Telescope, and the 24-inch Planetary Control Telescope plus ancillary facilities (housekeeping CDUA).
- 9/9/77 Board approves CDUA No. HA-5/26/77-995 for interim power plant expansion. (Four generator building)
- 1/13/78 Board approves CDUA No. HA-11/9/77-1009 by the National Weather Service, U. S. Department of Commerce for Telemetry Improvements which are part of the Hawaii Regional Tsunami Warning System.
- 11/9/78 Mauna Kea Ice Age Natural Area Reserve approved by the BLNR.
- 11/9/78 Agreement of transfer between the Science Research Council (agents for United Kingdom Infrared Observatory) and the University of Hawaii approved. University accepts responsibility for facilities located at Hale Pohaku.
- 1979 NASA 3.0 cm (120 inches) Infrared Telescope becomes

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- 1979 Canada/France/Hawaii Telescope (CFHT) 3.6 cm (144 inches) Optical/Infrared Telescope becomes operational.
- 1979 United Kingdom 3.8 cm (150 inches) Infrared Telescope becomes operational.
- 7/27/79 Board approves CDUA No. HA-2/14/79-1131 by the University of Hawaii for electric power use including interim and permanent improvements.
- 5/9/80 Board approves amendment to CDUA No. HA-2/14/79-1131 for temporary electrical power use.
- 5/16/80 Board approves CDUA No. HA-1210 for physiological research use involving hormone research for a period of six (6) days.
- 7/25/80 Board denies CDUA No. HA-3/17/80-1221 by Ski Shop Hawaii, Inc. for commercial snow skiing activities.
- 9/12/80 Board approves amendment to CDUA No. HA-527 for temporary research facility (Emilie Experiment); an experiment with a wide field photometer in the millimeter band.
- 3/2/81 Plans approved for replacement of Air Force 24 inch telescope with Vienna University Doppler 7-meter telescope. Amendment to CDUA: HA-5/25/77-524.
- 5/8/81
Withdrawn CDUA No. HA-4/16/81-1284 for limited research and educational use by the University of Hawaii facility involving collection of data and specimens, biological, geological and atmospheric.
- 5/29/81 Board approves CDUA No. HA-4/6/81-1314 for Data Collection and Observation for evaluation of remaining observatory sites on Mauna Kea; data to be correlated with mainland data for site selection purposes. Data collection also found to include soil borings (per 6/16/82 DLNR letter to University of Hawaii).
- 6/2/81 Doppler 7-Meter Plans revised, reviewed and approved.
- 8/26/81 Board approves CDUA No. HA-7/23/81-1357 for boring work at Hale Pohaku, for Mid Level Facilities planning and design.
- 11/16/81 Governor, State of Hawaii, signed Executive Order establishing the Mauna Kea Ice Age Natural Area Reserve.
- 1/22/82 University of Hawaii Board of Regents approves Program Summary and Reserach Development Plan for Mauna Kea Science Reserve and Related Facilities.

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Mauna Kea Plan, which states that access to Lake Waiau shall be only by trail. Visitors wishing to see Lake Waiau must now walk from the parking area located at the Olde Batch Plant site.

10/8/82 Board approves amendment to CDUA No. 653A filed for expansion of UKIRT facility by constructing a 1600 square feet building for computer, laboratory and storage space plus paving 3000 square feet of unpaved area, adjacent to facility and planned 1600 foot expansion.

11/7/82 University of Hawaii Research Corporation submits Mauna Kea Science Reserve Complex Development Plan Draft Environmental Impact Statement, Volume 1 and Volume 2, Technical Appendices to Department of Land and Natural Resources and to the Office of Environmental Quality Control.

11/7/82 - Draft EIS under review by Department of Land and
12/7/82 Natural Resources staff.

2. Agency Review, The Public Hearing Process and the Environmental Impact Statement

The Environmental Impact Statement (EIS) accepted on August 28, 1982, relating to this specific action causes Staff some concern.

- a. Several reviewers, as a part of the public review process of both the Notice of Preparation and the draft document have indicated their concern not with the program per-se, expressed by the University but by the manner in which the University is proceeding to implement their Program.

For example, the University's Environmental Center has suggested that:

"It is our understanding that the University has now adopted the "proposed" Research Development Plan and that under this plan, all future potential telescope sites and any necessary support facilities have been identified. The need now is for an overall EIS to address the impacts of the entire Research Development Plan (RDP). It appears from the Preparation Notice that such an approach is the recommended approach of the plan. What is unclear is the rationale in this EIS Preparation Notice that, because this (CALTECH) "application is preceding the adoption of the RDP, it is proceeding with its own EIS and CDUA." It would seem appropriate to delay assessment of this specific project until the State/University prepares the EIS for the total complex.

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- 3/24/82 University of Hawaii presents Program Summary and Research Development Plan for Mauna Kea Science Reserve and Related Facilities to Department of Land and Natural Resources for review.
- 4/23/82 Board approves CDUA No. HA-3/14/82-1430 for subdivision and construction of Hale Pohaku Mid-Level Facilities with Right-of-Entry for construction purposes.
- 6/29/82 University of Hawaii/Department of Land and Natural Resources meet to discuss and review Master Planning for Mauna Kea Science Reserve (First meeting).
- 7/82 Mauna Kea Science Reserve Master Plan, Environmental Impact Statement Notice of Preparation filed.
- 7/22/82 CDUA No. HA-7/22/82-1492 filed for construction of Caltech 10-Meter Telescope for Millimeter and Sub-millimeter Astronomy.
- 8/26/82 Governor accepts Environmental Impact Statement for California Institute of Technology 10-Meter Telescope for Millimeter and Sub-millimeter astronomy.
- 8/27/82 University of Hawaii/Department of Land and Natural Resources meet to discuss status of Mauna Kea Master Plan (Second meeting).
- 9/3/82 CDUA No. HA-1515 filed for construction of UK/NL Millimeter-Wave Telescope and Temporary Use of an Existing Unpaved Parking Area for a concrete batching plant in the Mauna Kea Science Reserve.
- 9/13/82 University of Hawaii/Consultants, Group 70 submit Preliminary Findings of Mauna Kea Science Reserve Master Plan; Schedule of Work Flow and Milestone Chart provided for department review and comment.
- 9/15/82 University of Hawaii, Institute of Astronomy, consultants and Department of Land and Natural Resources meet on Mauna Kea Science Reserve Master Plan. (Third meeting)
- 9/16/82 Consultant, Group 70, submits map of Mauna Kea Science Reserve Master Plan, Alternative Powerline Alignments for department review and comment.
- 9/21/82 Consultant submits Mauna Kea Science Reserve Master Plan, Outline for Management, Monitoring and Enforcement for review and comment.
- 9/82 Road to Lake Waiiau closed to prevent unauthorized vehicle use. This was done by the Natural Area Reserves System staff in compliance with the Department of Land and Natural Resources' 1977

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of that plan and therefore subject to legal question. A few specific points of concern are noted." (Emphasis added) (page 104)

The U.S. Department of Interior has commented that "by current standards, it is possible for proposals, like the C.I.T. telescope developments, to claim a tolerable increment in environmental impact in the summit, when realistically the development is boosting the tolerance level of impact and setting the stage for another increment. Six telescopes at the summit have made it possible to accept a seventh, with its "insignificant" increases in road traffic, sewage disposal, solid waste disposal, fuel consumption, etc. A Master Plan is needed which recognizes limits to development and impact. We believe this is needed before the C.I.T. proposal is approved." (Emphasis added) (page 94)

Additionally, the Hawaii Audubon Society has suggested "that local newspapers have reported recently that the University of Hawaii has approved a Mauna Kea Research Development Plan that envisions 13 identified telescopes on the summit by the year 2000. Now is the opportunity for the long-needed comprehensive EIS to cover all proposed development at the summit and downslope. The extensive biological survey that is essential for and adequate description of the environment would be part of the EIS for the whole development plan."

"Instead of proceeding on a piecemeal basis, which is unsatisfactory for exposing and mitigating long-term environmental impacts, the Society recommends that the California Institute of Technology project be held in abeyance until the comprehensive EIS for all projected development at the summit and downslope has been completed. Hawaii EIS Regulations require that "a group of proposed actions shall be treated as a single action when: (1) the component actions are phases or increments of a larger total undertaking..." (Emphasis added) (page 136)

"Instead of scurrying ahead with the CIT project and leaving undone the necessary biological data gathering and evaluation, it would seem a more judicious course -- consonant with the careful planning and high goals of the University's Development Plan for Mauna Kea -- to proceed with the comprehensive EIS and its integral data acquisition". (page A-92)

- b. In fairness to the University, they have provided responses deemed to be adequate by the reviewing authorities. These responses have taken the following form: (Staff uses the term University only insofar as the responses were signed by the University administrator)

To The Department of Interior

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The forthcoming draft EIS will describe in detail the

Mauna Kea Plan, and to the Research Development Plan for the Mauna Kea Science Reserve. It should be noted, however, that Caltech is not setting the stage for another increment. Although the Research Development Plan indicates a possible 13 total telescopes on the summit by the year 2000, the presence or absence of Caltech will in no way affect the plans of other observatories. (Emphasis added) (page 95)

To The University Environmental Center:

We agree with you that the ideal situation would be to hold back the Caltech EIS and incorporate it into a comprehensive EIS for the proposed development plan. Unfortunately, the ideal is not always achievable, particularly in economic times such as these when Federal funding is at a premium and delays in any part of the approval process could mean loss of funding forever. Caltech has an excellent opportunity to obtain funding for its project if certain requirements, including an acceptable EIS, can be completed during this fiscal year. (Emphasis added) (page 106)

To The Hawaii Audubon Society:

We do not perceive the proposed submillimeter telescope as being a phase or increment of a larger total undertaking. The research objectives of this action could be accomplished without any future telescopes being constructed on the mountain. In addition, construction and operation of the Caltech 10.4 meter telescope will not commit the University or the Board of Land and Natural Resources to any further development at the summit. The project will utilize the existing capacity of the infrastructure that is already in place. (For example, it will not be necessary to pave the road or develop a new power source in order to accommodate Caltech's requirements) In other words, this telescope will not be the catalyst which will result in commitments to future development in order to offset heavy infrastructure investments. (Emphasis added) (page 139)

To The Office of Environmental Quality Control:

Caltech had originally intended to file its EIS as an applicant. Discussions among members of my staff, and the staff of Environmental Quality Commission and Office of Environmental Quality Control resulted in submitting as an agency action based on the following reasons:

The University of Hawaii was designated proposing agency for this Environmental Impact Statement by virtue of their Master-Lease No. S-4191 for the Mauna Kea Science Reserve. Caltech had approached the University for permission to construct a telescope on the Science Reserve but did not have an interest in the land, such as an executed sub-lease

Therefore, the action which is the subject of this EIS is an agency action only because Caltech does not have standing, as yet, to be an applicant under current EIS regulations.

We stand by our position stated in the draft EIS pages 58 and 59 that Caltech's action is a single action which will not commit more telescopes to the mountain. (Emphasis added) (page A-72)

The Complex Development Plan (CDP) was initiated 1 May 1982. Caltech was quite far along in its plans before the UH Research Development Plan, which provided for a Complex Development Plan, was approved by the Board of Regents. Consequently, it requested (and was granted) permission from the University and the Board of Land and Natural Resources to proceed with its CDUA ahead of the plan. (Emphasis added) (page A-69)

To The Department of Land and Natural Resources:

"The construction and operation of the Caltech 10.4 meter telescope will not commit the University or the Board of Land and Natural Resources to any further development at the summit. The project will utilize the existing capacity of the infrastructure that is already in place. This telescope will not be the catalyst which will result in commitments to future development in order to offset heavy infrastructure investments. Your concerns about carrying capacity should be addressed in an EIS for the Research Development Plan which will be prepared sometime in the future." (Emphasis added) (page 113)

Staff at this stage has a question as follows:

Has the potential use of the Caltech telescope by itself or in conjunction with others been raised by the Astronomy personnel in any discussion with any other potential user or potential funding source?

Also cause for concern, in Staff's view, are the comments by Canada-France-Hawaii Telespace Corporation (CFHT) and the United Kingdom Infrared Telescope Unit (UKIRT) and the responses by the University.

Canada-France-Hawaii Telespace Corporation comment:

"We are satisfied that Caltech's project would not interfere with our own technical and astronomical activities on Mauna Kea. Indeed, we perceive the eventual coming of such a world leading facility as a very welcome neighbor in Hawaii and on Mauna Kea." (Emphasis added) (page A-113)

University of Hawaii response:

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"Thank you for your comments on the Draft EIS for Caltech's

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not interfere with the 3.6 Meter Canada-France-Hawaii
Optical Telescope." (page A-114)

United Kingdom Infrared Telescope Unit Comment:

"Millimetre and submillimetre observations will contribute strongly to our understanding of the universe, in particular, the formation of stars, planetary systems and organic chemicals in space. Mauna Kea is a truly unique site for this work since from this mountain one has more viewing time with good transparency in the appropriate wavelength regions than any other ground-based site. The construction of this facility and others of its type gain full advantage of the qualities of Mauna Kea for astronomy. Millimetre and submillimetre telescopes will complement the Infrared and Visible light telescopes existing on the mountain and enhance the overall scientific productivity.

Many believe that millimetre and submillimetre work will produce the most important advances in astrophysics over the next two decades. Scientists now at the California Institute of Technology are among those eminent in the field and will ensure that the project will be a success.

Positive impacts of new astronomical facilities will increase scientific prestige for the County and State and improve educational and job opportunities for young people." (page A-111) (Emphasis added)

University of Hawaii response:

"Thank you for your comments on the Draft EIS for Caltech's proposed 10-Meter Telescope at Mauna Kea, Hawaii.

We appreciate your highly regarded recognition of the possible contributions to the field of astrophysics that could be made by Caltech's telescope." (page A-112)

Also, responses to EIS reviews appear to clearly place the Board of Land and Natural Resources as the decision-making authority as the following indicates:

Response to Hawaii County, Planning Department:

The Board of Land and Natural Resources will have to approve of Caltech's application during the Conservation District Use Application (CDUA) Process. (Emphasis added) (page 118)

Hawaii County, Office of the Mayor:

We would like, however, to note that while the proposed telescope is included within the University's Research Development Plan, if it is to ultimately serve as the State's Master Plan for the Science Reserve, an approval of this plan by the Board of Land and Natural Resources

University of Hawaii response:

The University has a joint mission with other State constituencies to preserve and protect the unique attributes of the mountain. Accordingly, the University currently has plans to develop and seek approval of a single Conservation District Use Application (CDUA) for the Science Reserve. This CDUA will be subject to approval by the Board of Land and Natural Resources (BLNR). Thus, in effect, the Plan cannot be implemented without the approval of the BLNR. (Emphasis added) (page 124)

3. The Land Use Planning Perspective

Considering the chronology presented in our analysis, we are of the feeling that our actions, as Staff, as well as those of the Board, as decision makers, have demonstrated strong support for the University's Astronomy Program.

The Astronomy Program as we understand it, is an outgrowth of the University's selective excellence concept where certain academic programs were identified for growth and a desire for excellence based upon the resources of our State. As such, we as Staff have remained consistent in our consideration of their land use requirements when those requirements fall within our functional responsibility.

The question at this time before Staff is whether the Department should wait for the University of Hawaii's single EIS and Conservation District Use Application which will include all summit development to the year 2000, including Caltech's proposed facility. Such a collective proposal will provide the Department and the public with an opportunity to review and evaluate the total impact of the development proposed for the next twenty years.

We appreciate the reason for Caltech not wanting to wait. Our concern lies in the possibility that to recommend approval of their Conservation District Use Application (Process v. Substance) will be setting a precedence for other individual requests, resulting in an erosion of the total planning concept.

Consequently, there appears legitimate concern on the part of agency and EIS reviewers in the manner in which the University is proceeding.

In short, in Staff's view, although we agree and have supported the goals and objectives of the astronomy program, the manner in which the University is approaching their goals and objectives is considered by some, including Staff, as inappropriate.

Regardless of Staff's thinking, in our view we must consider the ramifications of our potential recommendation. For this, we again draw from the University's statements in the EIS which provides us the consequences of the effects of a recommendation

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"No action by Caltech on this specific proposal would not necessarily preclude the possibility of development of the site by another applicant. Several organizations have expressed an interest in locating facilities in the Mauna Kea Science Reserve."

"Mauna Kea is internationally recognized as a superior site for ground-based astronomy and, therefore, it can be anticipated that the State will receive requests from within the United States and from foreign countries for permission to locate telescopes there. It is probable that the University and the State will approve some of these requests if they meet the criteria set by the Mauna Kea Plan for locating a facility at the summit."

"If a telescope is not placed on this Mauna Kea site by Caltech, the immediate area will remain undisturbed for the time being. Because the site is within the area designated in the University of Hawaii's Research Development Plan as having the best properties for millimeter wavelength telescopes, it will continue to be a highly suitable location for other telescopes of this type."

(page 13) (Emphasis added)

As the University has stated in their response to the University Environmental Center," the ideal situation would be to hold back the Caltech EIS and incorporate it into a comprehensive EIS for the proposed development plan. Unfortunately, the ideal is not always achievable, particularly in economic times such as these when Federal funding is at a premium and delays in any part of the approval process could mean loss of funding forever. Caltech has an excellent opportunity to obtain funding for its project if certain requirements, including an acceptable EIS, can be completed during this fiscal year." (Emphasis added) (Page 106)

The funding loss is not, however, considered an irreversible or irretrievable commitment of resources. (page 83) Furthermore it is not even suggested as such.

Staff feels that the University acted in an inappropriate manner by seeking financial commitment to a land use prior to requesting and receiving Land Board approval of that land use. In our view the University has placed an arduous burden on both the Staff of the Department and its decision-making body through their lack of respect for Staff's functional responsibilities in reviewing, analyzing and recommending to the decision-making body, and, placing the decision-making body in a situation where some may perceive a narrowness of their options.

That said, Staff, considering the Astronomy Program, the statements made in the instant case as well as the criteria set forth for land use within our Resource Subzone, must attempt to draw a balance whereby the best recommendation can be forthcoming.

Staff does feel that to consider a denial will do more than simply www.carrollcox.com 808-782-6627 this specific telescope as the University suggests. (pg. 106)

Staff feels that a denial may adversely affect other potential users through a lack of credibility on the part of the University Astronomy Program personnel, whose past pattern of action has been to make representations committing other State and local agencies whose functional responsibility lies outside the auspices of the Astronomy Program.

Additionally, the selected site does appear suitable as a land use for a telescope operation. The University did state that should the use be denied in this instance, another user may come forth in the future for the same land use.

However simply to recommend approval of this land use without a clear, firm understanding of the Staff position would, in our view, continue a past practice by which the functional responsibility of our Department is ignored by the University.

In the past, the Board has, through its actions, directed Staff to refrain from using economic issues or funding as an argument to be analyzed in terms of land use within the Conservation District. For example, in the private sector on Kauai, commercial helicopter operations arguing financial constraints were not considered by the Staff, or, as in the case in the public sector on Oahu, related to the Department of Transportation's H-3 Project where economics or funding was not considered.

Staff disagrees with the University's expressed position that the rationale for not doing a Master Plan and its concomitant EIS is a matter of funding. (pg. 106)

To our knowledge, nowhere in the Environmental enabling legislation, the Environmental Rules and Regulation or in the Environmental Rules of Procedure as well as our Administrative Rules is any provision made for not doing a full and comprehensive EIS relating to the use of the entire summit area due to funding.

Rather, the University is seeking Staff concurrence to what some may perceive as a dangerous precedent.

Specifically, the Board in its revision in 1978 of our Administrative Rules is on record that all applicants be treated equally in the application of the Administrative Rules of which the Environmental process is a part.

Should we simply agree with the University's position, the effect would be that the private sector would be placed in a similar position resulting in full compliance with the Environmental Regulation based on funding. Again, in fairness to the University, a denial of the land use may not affect the potential user insofar as the University stated only an acceptable EIS be completed this fiscal year. (pg. 15 submittal)

Clearly, in our view, this would enunciate the intent and past application of the Environmental Rules.

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In our view, the application and extent of the Environmental Law is not a function of money or funding. Were we to agree with the University's position the same argument could then, in our view, be successfully used to negate the environmental act altogether. The University, or another applicant, could simply argue that due to funding they could not comply with the statutes or regulations.

We suggest that should the University feel their argument is valid and sound, they approach the Legislature for a change in the existing statute.

These arguments notwithstanding, the environmental document, relating to information and disclosure, has been accepted for this issue.

Staff also questions the rule of the University Administration, as qualified by our statement on page 14, in this matter. The EIS for this telescope specifically references the University's Master Plan as follows:

"In the early 1970's it was recognized that an overall Mauna Kea plan was necessary in order to control development on the mountain and to resolve the conflicting demands of various users who wanted to use the mountain for their activities. Extensive citizen participation in the planning process followed. The main objective of the process was to "Determine the compatibility of Mauna Kea's resources to accommodate various uses without unacceptable damage to biotic and other natural values and historic values and the visual appearance of the mountain." (Mauna Kea Plan) The Mauna Kea Plan, a policy framework for the management of Mauna Kea, was adopted by the Board of Land and Natural Resources on February 11, 1977. It was a direct outgrowth of this participatory process." (Emphasis added) (page 53)

We note from the Draft Mauna Kea Science Reserve Development Plan (MKS RDP) that its contents have already been approved by the Board of Regents (BOR). The specific statement is as follows:

"Because of the excellence of the site, it can be expected that the State will continue to receive requests for permission to locate additional telescopes on Mauna Kea. In order to guide and control the expected growth of facilities on the mountain, the University has formulated a Research Development Plan which will serve as the programmatic Master Plan for the continued development of the Mauna Kea Science Reserve and related facilities. The Mauna Kea Science Reserve Master "Plan", which was adopted by the UH Board of Regents on 22 January 1982, was developed to reflect State policies such as those set out in the Mauna Kea Plan," the UH Manoa Academic Development Plan, and the Hale Pohaku Complex Development Plan". (Emphasis added) (MKS RDP, pg. 2) (The equivalent statement appears on page 54 of the EIS)

The BOR Master Plan calls for a paved road to the summit and further, is evaluating overhead utility corridors in direct conflict with the Mauna Kea Plan.

Also, the decision on the utility lines is to be made on environmental cost considerations without consideration of our MKSRDP (page 16)

On page 44 (MKSRDP) for example, the University states that the concerns of the skiers will be "considered". We cannot explain to the public what "considered" means.

On page 45 (MKSRDP) the University states that day time noise may pose a problem to the sleeping scientists. Again we cannot explain the potential ramifications should the mitigation measures taken by the University not work.

Considering the University position that it is clear that night time use of the summit belongs to them, to which we agree, we have questions about the University allowing day time snow-playing or skiing. Further, we have questions that the University, in the long run will even allow the public, based upon the scientists' sleeping requirements, access to the mountain via a paved road. These concerns need to be clearly resolved.

Consequently, we feel that rather than the Land Board going through the public hearing/meeting process, the University should present their case to the people of the Island of Hawaii, so these questions may be explained and clarified.

In short, we cannot answer the questions we would expect to be posed by the public. However, insofar as the University can, they should be the instrument rather than the Land Board by which these apparent conflicts are reconciled.

The University's position notwithstanding, Staff has its greatest concern with the attitude of the University Astronomy Program in terms of its planning for the future. Our concerns are specific.

- A. Staff has consistently in the past suggested that the University proceed with a Master Plan or single Conservation District Use Application (CDUA) prior to attempting to interest potential users of the summit.

Our rationale had several reasons:

1. By allowing the Board as the responsible body to review a total concept envisioned for the summit, i.e., Master Plan/single Conservation District Use Application, judgments by the Land Board as the responsible body could provide guidance to the University in their future actions relating to the summit;

2. This process would also allow the University to...
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...appropriateness of their program and give the

3. The University would be implementing their plan rather than acting on a piecemeal basis with our Department passing apparent judgment on potential users; (UK, CFHT, Caltech)
4. The University, with the knowledge of an approved Science Reserve Master Plan, consistent with the Land Board approved Mauna Kea Plan could then seek to implement the Plan. We continue to feel that it is not our business or functional responsibility who the potential user may be. That properly remains a function of the University. However, by the same token, the University should respect function of land use.

We do not feel they have.

B. We, as Staff, feel the University has presumed, although Staff is in agreement to the processing of this application, that the application is to be approved.

1. They have clearly stated in their response to the University Environmental Center that, "delays in any part of the approval process could mean loss of funding forever;" (page 106)
2. Notwithstanding the statement of the University, the only commitment the University received from our Department was that of allowing the processing of a Conservation District Use Application for this telescope. (pg. 107)

Staff is aware of our past actions whereas we have taken the position that to allow the processing of an application, on State lands, in no fashion implies an eventual recommendation of approval to be presented to the Board.

As such, there are clear distinctions, in Staff's view, which have consistently been applied by all our Divisions in terms of process and substance. Regardless of the concept of processing, every application has nevertheless been evaluated on its merits in terms of substance.

3. As such, in our view, the University has not sincerely acknowledged the discretionary responsibility vested in the Land Board. But it has, through its actions by Astronomy Program personnel, in bringing this matter before the Board, placed the Staff and the Board in a non-discretionary position. And, that position is that Staff must recommend in the affirmation, and, regardless of the Staff recommendation the Board must approve. To do otherwise represents an affront to the Astronomy Program.

acknowledged the need for a Master Plan for the use of the summit. This acknowledgement based upon discussion with Staff and the Board, and, is consistent with discussion we have held with other large project land users such as Sea Life Park, Waimea Falls Park, and Hawaii Loa College.

Furthermore, we understand that the University is in the process of preparing such a plan and expects it to be forthcoming for public review in the near future.

As such, and, insofar as this Master Plan is a logical outgrowth of the Mauna Kea Plan, and is presently in process by the University, Staff recommends as follows:

RECOMMENDATION:

- A. Approval of the application subject to the following conditions:
1. That the applicant comply with all applicable statutes, ordinances, rules and regulations of the Federal, State and City and County governments, and applicable parts of Section 13-2-21 of Title 13, Chapter 2, Administrative Rules, as amended;
 2. Other terms and conditions as prescribed by the Chairman;
 3. In that this approval is for use of conservation lands only, the applicant shall obtain appropriate authorization through the Division of Land Management, State Department of Land and Natural Resources for the occupancy of State lands;
 4. In the event any unanticipated sites or remains such as shell, bone or charcoal deposits, human burials, rock or coral alignments, pavings, or walls are encountered during construction, the applicant shall stop work and contact the Historic Preservation Office at 548-7460 or 548-6408;
 5. That the applicant comply with all applicable Public Health Regulations;
 6. A fire contingency plan, acceptable to the Division of Forestry and Wildlife shall be implemented during and after the construction of the structure.
- B. That this approval is not to be considered as precedence for any future action the Board may desire to exercise through their discretionary conditional land use action.
- C. That no further commitment of land use within the Mauna Kea Science Reserve be considered until such time as the University of Hawaii Mauna Kea Science Reserve Development Plan
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is completed and consistency between that plan and the
Department's Mauna Kea Plan has been achieved.

Respectfully submitted,



ROGER C. EVANS
Staff Planner

Attachments

APPROVAL FOR SUBMITTAL:



SUSUMU ONO, Chairman
Board of Land and Natural Resources